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# Topic: U.S. investment in high-speed rail is desirable.

## Helping the Economy (PRO)

***PRO: Increases Economic Activity (ex. $1 investment yields $4 of economic growth)***
*American Public Transportation Association, Last accessed October 2022*
https://www.apta.com/research-technical-resources/high-speed-passenger-rail/benefits-of-high-speed-rail-for-the-united-states/
Increases Economic Activity: Every $1 invested creates $4 in economic benefits. Upgrading passenger operations on newly revitalized tracks, bridges and rights of way is spurring business productivity along corridors. The rail services will connect America's economically vital mega-regions and help keep them mobile, productive, efficient, and internationally competitive.

***PRO: Shortened Travel Time Boosts Productivity (ex. saves $140 billion by reducing congestion)***
*American Public Transportation Association, Last accessed October 2022*
https://www.apta.com/research-technical-resources/high-speed-passenger-rail/benefits-of-high-speed-rail-for-the-united-states/
Congestion on our nation's roads costs $140 billion in lost time and productivity. The U.S. population is projected to grow by another 100 million people in the next 40 years. The population growth is creating mega-regions that will not prosper unless they can be freed from the stranglehold of highway and airport congestion. At the same time, the United States cannot build enough highway capacity or airport runways to meet demand.

***PRO: Increases Job Creation (ex., construction jobs, maintenance jobs, and new businesses)***
*American Public Transportation Association, Last accessed: October 2022*
https://www.apta.com/research-technical-resources/high-speed-passenger-rail/benefits-of-high-speed-rail-for-the-united-states/
Creates Jobs: Building high-speed rail will create hundreds of thousands of jobs. Every $1 billion in investment creates 24,000 jobs. These are highly skilled jobs that will revitalize the domestic rail industries supplying transportation products and services. Many additional jobs are created through the commerce fostered through the economic activity and development which they spark.

***PRO: Increases Economic Growth/Productivity (ex. lowers transport costs / brings cities closer)***
*Prof. Roger Vickerman, University of Kent, Transport Policy, February 2018*
https://www.sciencedirect.com/science/article/abs/pii/S0967070X17301002
High-speed rail is frequently claimed to have a transformative effect on the economy. By bringing cities and regions closer together it is argued that economies can benefit from lower generalized costs of transport leading to enhanced growth and productivity. A counterargument is that such effects are largely redistributive with some regions benefiting and others suffering depending on their ability to take advantage of new opportunities. However, some argue further than this and claim that such step changes in transport provision can lead to major changes in economic structure that can transform regions' absolute as well as relative positions and thus redress the existence of regional disparities.

***PRO: Consumes Less Oil Than Planes/Automobiles (reduces the country's expenditure on oil)***
*American Public Transportation Association, Last accessed October 2022*
https://www.apta.com/research-technical-resources/high-speed-passenger-rail/benefits-of-high-speed-rail-for-the-united-states/
Implementing high-speed rail will keep billions of dollars in the U.S. economy by decreasing the amount of oil that the U.S. consumes. According to the International Association of Railways (UIC), high-speed rail is eight times more energy efficient than airplanes and four times more efficient than automobile use. It will also decrease greenhouse gas emissions and improve air quality.

***PRO: Lower Transport Costs Increases Trade (ex. 10% higher cost = 20% lower trade)***
*Jean-Paul Rodrigue, Author of The Geography of Transport Systems (2020)*
https://www.sciencedirect.com/science/article/abs/pii/S0967070X17301002
Transport costs have significant impacts on the structure of economic activities as well as on international trade. Empirical evidence underlines that raising transport costs by 10% reduces trade volumes by more than 20%. The general quality of transport infrastructure can account for half of the variation in transport costs. In a competitive environment where transportation is a service that can be bid on, transport costs are influenced by the respective rates of transport companies, the portion of the transport costs charged to users.

## Helping the Economy (PRO): *Continued…*

***PRO: Rails Save Pollution-related Health Costs (ex. reduced negative externalities of pollution)***
*Sustainability, April 1, 2020.*
https://www.mdpi.com/2071-1050/12/7/2763/pdf
Haze pollution has been the subject of increasing concern among both academics and practitioners alike, due to its serious consequences in the long term. It has been shown to have direct influences on the health and life spans of residents, the innovation capabilities of firms, and the economic development of local cities [1–5]. According to a World Health Organization report in 2016, almost 3 million deaths every year are related to air pollution, of which 94% of these deaths are due to respiratory infections, lung disease, and lung cancer because of the inhalation of particulate matter (PM). In addition, cities with severe air pollution are likely to experience a loss of talent and a decrease in regional vitality and creativity. Haze pollution, as one type of air pollution, is mainly caused by particulate matter and can be easily observed compared with other pollutants, such as SO2, NO2, or CO, because of its visibility.

## Helping the Environment (PRO)

***PRO: Higher Energy Efficiency (Lower air pollution than planes and automobiles)***
*American Public Transportation Association, Last accessed October 2022*
https://www.apta.com/research-technical-resources/high-speed-passenger-rail/benefits-of-high-speed-rail-for-the-united-states/
Implementing high-speed rail will keep billions of dollars in the U.S. economy by decreasing the amount of oil that the U.S. consumes. According to the International Association of Railways (UIC), high-speed rail is eight times more energy efficient than airplanes and four times more efficient than automobile use. It will also decrease greenhouse gas emissions and improve air quality.

***PRO: Climate Change Solution (mass transit trains reduce cars and emissions on roads)***
*U.S. High-Speed Rail Association, Last accessed: October 2022.*
https://www.ushsr.com/benefits/climate/
High-speed rail is the single largest climate solution that can decarbonize the majority of our transportation network quickly. This includes replacing most domestic flights, up to half the car trips, and replacing the eCommerce shipment system currently using energy-intensive, cross-country trucks and airplanes. No other solution comes close in solving climate change.

***PRO: Promotes Use of Green Energy (HSR trains can run on renewable electricity)***
*US High-Speed Rail Association, Last accessed: October 2022.*
https://www.ushsr.com/benefits/climate/
HSR is electrically powered and can run 100% on clean, safe renewable energy. One high-speed train powered by the wind can carry more passengers than 9 oil-burning, carbon-spewing airplanes! America consumes 20 million barrels of oil every day, most of it for transportation - so switching to oil-free high-speed rail is a huge climate and energy security solution all in one.

***PRO: Protects Environment Against Degradation (ex. reduces demand for natural resources)***
*Global Railway Review, June 13, 2018.*
https://www.globalrailwayreview.com/article/69858/10-reasons-america-needs-high-speed-rail/
America is in deep trouble due to our extreme oil dependency for 98 percent of our transportation; consuming some 20 million barrels of oil every day, 70 percent of which is for transportation. Maintaining this enormous flow of oil requires America to dig up oceans, protected national forests, and the arctic tundra; risking our clean drinking water, our health, and our safety – without forgetting the expensive consequential wars. None of this is sustainable or desirable.

***PRO: End Wars for Oil (less demand for oil = fewer wars = less environmental impact)***
*Reason Foundation, May 2013*
https://reason.org/wp-content/uploads/files/high_speed_rail_lessons.pdf
Environmental: HSR uses one-third the energy of air travel and one-fifth the energy of automobile travel.40 Further, HSR will help reduce the $700 billion-a-year oil purchase trade deficit. HSR will reduce global warming by decreasing U.S. oil consumption and emissions. It will also end wars for oil and reduce our dependence on costly military operations.

## Helping the Environment (PRO): *Continued…*

***PRO: Smaller Right of Way than Motorway (rail lines can be built without disturbing land use)***
*High Speed World, International Union of Railways, Last Accessed October 2022*
http://www.highspeedworld.net/high-speed-rail-and-sustainable-mobility.html
High-speed responds to the need for logistical efficiency – the reduction of travel times – but also to environmental challenges, by reducing notably the use of polluting forms of transport, such as the automobile and airplane. High-speed rail permits the reduction of CO2 emissions, in particular when electrical power sources are derived from a decarbonized source or renewable energy. On a land use level, the concept of a high-speed line – which requires less right-of-way than a motorway – aims to diminish the environmental impact upon regions crossed. Environmental impact studies, which are obligatory in certain countries, provide for the definition of the line's route to protect biodiversity, avoid classified agricultural areas, residential areas, and protected natural environments, in order to preserve the water and to protect neighbors from visual or noise nuisance. In China, a significant portion of track is elevated, which avoids the effects of territorial breakdown, problematic for rural areas as well as urban districts.

## Helping the Community (PRO)

***PRO: Clean and Healthy Environment (ex. less air pollution reduces health hazards)***
*Environmental and Energy Study Solutions, July 19, 2018.*
https://www.eesi.org/papers/view/fact-sheet-high-speed-rail-development-worldwide
Environmental considerations. High-speed rail clearly offers a path to lower greenhouse gas emissions than other modes of transportation. If HSR services can entice people out of their cars by offering convenience and speed at a low cost, this would significantly reduce societal energy consumption and carbon emissions. The California High-Speed Rail Authority (CHSRA), for example, estimates that by 2040, California's HSR system will reduce vehicle miles of travel in the state by 10 million miles each day; over a 58-year period, the system will reduce auto traffic on the state's highways by over 400 billion miles of travel. In addition, CHSRA estimates that starting in 2030, the state will see a reduction of 93 to 171 flights daily, which translates into improved air quality and improved health, along with the economic benefits of a more energy-efficient transportation system.

***PRO: Solution to Future Transportation Needs*** *(ex.* ***higher transport demand from a bigger population****)*
*CNN, May 30, 2022.*
https://edition.cnn.com/travel/article/future-rail-travel-cmd/index.html
According to a 2019 report by engineering consultant Arup, the global population is expected to reach around 9.5 billion by 2050, 75% of whom will live in cities. The company estimates that the global urban population is growing at two people per second, creating 172,800 new city-dwellers every day. While populations decline in some regions of the world, such as parts of Europe and Japan, an estimated 90% of population growth is expected to occur in the cities and megacities of the developing world. To keep these fast-growing cities, regions and megacities moving, efficient public transport is not just desirable, but imperative. Cars, electric or otherwise, cannot absorb an increase of this magnitude and rail transport -- trains, trams and metros -- will have to do most of the heavy lifting to prevent our cities, and national economies, from seizing up.

***PRO: Travelling by Rail is Safer (trains are hardly involved in accidents, unlike automobiles)***
*Global Railway Review, June 13, 2018.*
https://www.globalrailwayreview.com/article/69858/10-reasons-america-needs-high-speed-rail/
Approximately 43,000 people are killed every year in car accidents in America and another million more seriously injured. High-speed rail is the world's safest form of transportation proven by decades of safe operation. Japan was the first nation to build high-speed rail in 1964 and has since transported 10 billion passengers without a single fatality! France has a similar record with their 30 years of high-speed rail operations, as do several other countries.

***PRO: Promotes Affordable Housing (helps solve housing crisis)***
*Harvard International Review, September 22, 2019*
https://hir.harvard.edu/faster-cheaper-smarter/
It is self-evident that HSR increases the convenience of living in outlying suburbs of crowded and expensive cities, making housing more affordable for people working in those cities. As a result, Japan's experience over the 55-year span of HSR linking cities throughout the country is instructive for policy makers in the United States. HSR has the potential of adding significant residential land to America's quickly-growing coastal cities with expensive housing. In doing so, it also opens up less economically successful cities to a more robust future.

## Helping the Community (PRO): *Continued…*

***PRO: Improved Convenience of Travel (lower restrictions than airplanes)***
*S: Smart Cities Dive, Last accessed October 2022*
https://www.smartcitiesdive.com/ex/sustainablecitiescollective/benefits-high-speed-rail/151136/
Q: With high-speed rail, travel times for distances of 400 miles or less could compare favorably to travel time by air — with much less hassle. Train travel has far fewer restrictions on luggage than air travel, along with a somewhat more relaxed boarding process. In addition, many passenger trains feature amenities such as electric outlets for laptops and roomy seats, along with the opportunity to sit back and relax while chatting with fellow passengers or just watching the scenery go by.

***PRO: Promotes Social Cohesion (the ease and convenience of travel connects distant people)***
*S: Smart Cities Dive, Last accessed October 2022*
https://www.smartcitiesdive.com/ex/sustainablecitiescollective/benefits-high-speed-rail/151136/
Q: High-speed rail can promote a sense of social cohesion among residents, by bringing distant populated areas closer together. Sprawl is a reality of modern American urban life. The metropolitan areas for cities like Chicago spread far beyond the borders of the city. In addition to sprawl, a large country like the United States often has vast distances between populated areas. High-speed rail reduces the travelling distance between far flung suburbs and center cities.

***PRO: Saves Society CO2-Related Costs (Ex. rails reduce negative effects of pollution by 4 times)***
*S: International Union of Railways (UIC), November 13, 2017*
https://uic.org/sustainability/energy-efficiency-and-co2-emissions/
Q: Travelling by rail is between three and ten times less CO2-intensive compared with road or air transport. Rail's share of transport energy consumption is less than 2%, despite a market share of over 8.5%. Land use per passenger-km is about 3.5 times lower for rail than for cars. Average external costs (i.e., costs of negative effects of transport, such as air pollution, not paid by users themselves but borne by society at large) are more than four times less for rail than for road in respect of passenger services, and over six times less for freight services.

# Topic: U.S. investing in high-speed rail is desirable.

## Harming the Economy (CON)

***CON: Requires Massive Initial Investment (Ex. high construction costs)***
*CATO Institute, April 20, 2021*
https://www.cato.org/policy-analysis/high-speed-money-sink-why-united-states-should-not-spend-trillions-obsolete#united-states-freeway-shortage
California has spent an average of more than $100 million per route-mile building 220 mph track on flat land.17 The latest estimates project that the entire 520-mile route will cost $100 billion, of which $20 billion is for 120 miles of flat land and $80 billion is for 400 miles of hilly or mountainous territory.18 That works out to $200 million a mile for hilly areas. At these costs, Obama's original high-speed rail plan would require well over $1 trillion, while the USHSR's plan would need well over $3 trillion. Building a system longer than China's would cost at least $4 trillion.

***CON: High Operation and Maintenance Costs (High costs end up outweighing benefits)***
*CNN, May 30, 2022.*
https://edition.cnn.com/travel/article/future-rail-travel-cmd/index.html
Blending Japanese "bullet train" technology with British design, HS2's $2.5 billion fleet will revolutionize inter-city travel between London and England's Midlands and northern cities. Transferring long-distance traffic to HS2 will also release much-needed capacity on existing railways to carry more local passengers and freight. Nevertheless, over several decades of operation, countries such as France, Japan and China have concluded that the benefits of operating high-speed trains above 200mph are outweighed by the much higher maintenance and energy costs they incur.

***CON: HSR Are Energy Hogs (high speeds consume more energy than conventional speeds)***
*CATO Institute, April 20, 2021*
https://www.cato.org/policy-analysis/high-speed-money-sink-why-united-states-should-not-spend-trillions-obsolete#united-states-freeway-shortage
It takes a lot more energy to move a train at 220 mph than to move one at conventional speeds of 60–80 mph. "The power required increases with the cube of the train speed," notes engineering professor Alan Vardy. To partially make up for this cube law, high-speed trains are built especially light, but they still require more energy to move. The East Japan Railway Company, which operates both high-speed and conventional trains in Japan, says that moving a high-speed train car one kilometer requires 57 percent more energy than a conventional train car.

***CON: Expensive Means of Traveling (Ex. trains cost $1/passenger-mile against $0.25 for driving)***
*CATO Institute, April 20, 2021*
https://www.cato.org/policy-analysis/high-speed-money-sink-why-united-states-should-not-spend-trillions-obsolete#united-states-freeway-shortage
To generate new travel, a new transportation system must be faster, more convenient, and less expensive than existing systems. High-speed rail fails all these tests, being slower than flying, less convenient than driving, and more expensive than both. On that last point, airfares average less than 14 cents per passenger-mile, and Americans spend an average of 25 cents a passenger-mile on driving while Amtrak fares for its high-speed Acela average nearly $1 per passenger-mile.

***CON: Train Vibrations Can Damage Nearby Structures (Train's high speed induces harmful vibrations)***
*International Journal of Applied Mechanics and Engineering, Volume 21, February 2016*
https://ui.adsabs.harvard.edu/abs/2016IJAME..21...15G/abstract
The following research focuses on the dynamic analysis of impact of the high-speed train induced vibrations on the structures located near railway tracks. The office complex chosen as the subject of calculations is located in the northern part of Poland, in Gdańsk, in the proximity of Pendolino, the high-speed train route. The high-speed trains are the response for the growing needs for a more efficient railway system. However, with a higher speed of the train, the railway induced vibrations might cause more harmful resonance in the structures of the nearby buildings. The damage severity depends on many factors such as the duration of said resonance and the presence of additional loads. The studies and analyses helped to determinate the method of evaluating the impact of railway induced vibrations on any building structure. The dynamic analysis presented in the research is an example of a method which allows an effective calculation of the impact of vibrations via SOFISTIK program

## Harming the Environment (CON)

***CON: Environmental Pollution (Ex. numerous environmental impacts during rail construction)***
*Complexity, Volume 2020, May 20 2020.*
https://www.hindawi.com/journals/complexity/2020/7154076/
There exists a close relationship between high-speed railways and environmental pollution, which mainly comprises air pollution, water pollution, noise pollution, vibration and low-frequency sound, and various kinds of pollution that occur during construction of the railway. The sewage along the high-speed railway mainly comes from the production and maintenance sites of the automatic trains, high-speed trains. There are also many environmental impact factors that arise during the construction period, which include disturbing the surface, damaging the surface vegetation, destroying the original topography, and basic farmland occupation as well as factors that affect the nature reserve, natural landscape, human landscape, and cultural and historical sites.

***CON: Little Positive Climate Change Outcome (HSR take 71 years to offset own carbon emission)***
*Reason Foundation, March 23 2021*
https://reason.org/commentary/high-speed-rail-is-unlikely-to-play-a-major-role-in-achieving-climate-goals/
In a 2010 University of California—Berkeley study, professors Mikhail Chester and Arpad Horvath estimated that the entire California high-speed rail project would generate 9.7 million metric tons of carbon dioxide during construction. They also estimated that it would take high-speed rail 71 years of operation at medium occupancy to offset its own construction-related greenhouse-gas emissions.

***CON: No Guaranteed Energy Savings (ex. benefits can be countered by investment costs)***
*Reason Foundation, May 2013*
https://reason.org/wp-content/uploads/files/high_speed_rail_lessons.pdf
Secondly, estimates of the reduced energy use and pollution arising from HSR often fail to consider its construction and maintenance costs, while also assuming that automotive and airplane engine technology will not become more energy efficient in the future. For example, the California High Speed Rail Authority's uses its own environmental impact statement (EIS), to suggest that high-speed trains will produce large energy savings. 51 According to the EIS, the energy savings from operating high-speed rail will repay the energy cost of construction in five years. However, this assumes that the energy efficiency of autos and planes will not improve. If, over the lifetime of a high-speed rail project, autos and planes become 30% more fuel-efficient (which is not an unreasonable assumption), then the energy payback period for high-speed rail rises to 30 years. And since rail lines require expensive (and energy-intensive) reconstruction about every 30 years, high-speed rail may not actually save energy at all.

***CON: Creating More Pollution Than Saved (ex. HSR = Too Energy Intensive)***
*Reason Foundation, May 2013*
https://reason.org/wp-content/uploads/files/high_speed_rail_lessons.pdf
Environment: HSR creates more pollution than it prevents because building a HSR line is very energy intensive. The California Air Resources board estimated there are many more cost-effective ways to improve the environment than building HSR between Los Angeles and San Francisco.

***CON: Physically Damages the Environment (Building Rail lines causes ecological disturbances)***
*Frontiers in Built Environment, June 27 2019*
https://www.frontiersin.org/articles/10.3389/fbuil.2019.00079/full
On the other hand, HSR also brings some economic, social and environmental disadvantages. First, land occupation and environmental damages, as the designers always try to avoid curved tracks for HSR that can cause accidents whilst trains operate at high speed over 250 km/h. In this case, the process of constructing infrastructure for HSR will take up many different lands such as residential areas, forestland, farmland, etc. In order to operate in straight lines, HSR has a high proportion of track on structures (viaducts, bridges, embankments) and in tunnels and cuttings. This leads to problems of visual intrusion, severance and ecological disturbances.

## Harming the Environment (CON): *Continued…*

***CON: Habitat Destruction (Construction of corridors can displace wildlife)***
*Environmental Management, January 1993*
https://ui.adsabs.harvard.edu/abs/1993EnMan..17..111D/abstract
Potential environmental impacts on wildlife result from siting and construction (short-term impacts) and habitat removal and fragmentation (long-term impacts) as a consequence of transportation corridor construction. Especially in rural districts, wildlife migration corridors and dispersal orientation are altered or destroyed and wildlife populations and their gene pools are isolated. This significantly weakens the wildlife community. Prudent selection of construction corridors reduces fragmentation impacts by maximizing preserved fragment sizes, and by running parallel to, not through, natural areas. Corridor width determines the degree to which wildlife movement is restricted except that culverts, underpasses, overpasses, and one-way gates, can aid wildlife in cross movements. Minimum underpass dimensions for large wildlife should be no smaller than 14 ft×14 ft and should include natural substratum inverts. Rail corridors have four characteristics that minimize adverse environmental impacts. The railbed is dry, ballast filters runoff, there is little runoff beyond the toe of slope, and drainage ditches serve to control sheet flow and erosion, sediment movement, and uncontrolled channel flow. Rail corridors usually occupy smaller land areas because they are narrower and are more feasible to elevate so as to allow free movement of wildlife across the corridor.

## Harming the Community (CON)

***CON: Adverse Impact on Minority Communities (Ex. disintegration of ethnic communities)***
*Reason Foundation, May 17, 2022*
https://reason.org/commentary/the-california-high-speed-rail-projects-negative-impacts-on-minority-communities/
Concerns over the effects of infrastructure construction on disadvantaged neighborhoods emerged after the freeway construction boom in the 20th century. The poster child for this problem was the Cross Bronx Expressway, a segment of I-95 built by controversial New York planner Robert Moses. Although the freeway improved connections between the city and northern and western suburbs, it bisected ethnic communities. The project is often blamed for creating one of America's notorious ghettos in the South Bronx, which was largely destroyed by fires in the 1970s.

***CON: Source of Crime (public transportation facilitates crime)***
*Journal of Economics and Politics, 2015*
https://collected.jcu.edu/cgi/viewcontent.cgi?article=1003&context=jep
Public transportation affects crime rates in neighborhoods surrounding its implementation. It can give criminals easier access to potential targets and decrease the probability of getting caught, or it can give lower-income individuals better access to reliable transportation, which decreases the probability of those individuals getting involved in criminal activity. This paper analyzes available criminal data, property data, and public assistance data for the City of Cleveland to study the effects on property crime rate after the 2008 implementation of a public bus line. The paper's hypothesis is that there is a difference in the mean crime rate before and after the bus implementation, to be tested with a t-test. Using fixed-effects and pooled OLS models, the findings were that the bus caused an increase in the mean property crime rate in the census tracts touching that line by about 1.4%. This provides evidence that public transportation does in fact increase crime rates in areas surrounding it. Given that the nature of this study is only to observe the effects in the short run, a possible extension and follow-up study would be to revisit this issue when more years of crime rate data are available of the tracts use.

***CON: Higher Risk/Rate of Disease Transmission (higher interactions in mass transit modes)***
*International Journal of Public Health, November 11, 2021*
https://www.ssph-journal.org/articles/10.3389/ijph.2021.1604090/full
We have first shown a negative short-term impact of the HSR on TB transmission in China, the results are consistent with a previous study. Tang examined the large-scale expansion of Japanese railways at the end of the 19th century and found that the average annual mortality in newly covered areas by railways increased by 169 per 100,000 capita; 75% of mortality related to rail was attributed to infectious disease spread, including TB and influenza [28]. Even though the public health system has made great updates since the twentieth century, the introduction of a new HSR can still influence TB transmission in a direct or indirect manner

## Harming the Community (CON): *Continued…*

***CON: Source of Disparities (unmatched growth of core economies vs. peripheral economies)***
*Sustainability, January 6, 2022*
https://www.mdpi.com/2071-1050/14/2/602/pdf
In this study, we evaluated the social equity before and after the introduction of HSR in Vietnam through considering factors influencing the transport mode choice and analyzing the Theil index. Some key findings are summarized as follows: (1) Inter-city buses and conventional trains were considered attractive by people, due to their affordable fares, flexibility, and amenities before and after the introduction of HSR. In other words, many people would potentially be excluded from the use of HSR, as their incomes are insufficient to pay the high fares of HSR; (2) the social impacts of HSR were also indicated by the difference in preference of transportation modes among cities. Although economic disparity was not found to exist among the four selected cities, social inequity in choosing HSR was observed in these cities. More specifically, low-income groups in Vinh and Nha Trang were observed to have a higher tendency of staying away from HSR.

***CON: Source of Noise Pollution (Noise is a nuisance and can harm health)***
*University of California Institute of Transportation Studies, 2022*
https://escholarship.org/uc/item/1672c2f2
Noise is perhaps the most immediately sensible environmental impact from HSR and air transport. In addition to being an annoyance, noise pollution also has consequences for human health. When severe or persistent enough, noise pollution can cause sleep disorders (Muzet 2007), impair learning (Klatte et al. 2013),and increase risk for cardiovascular disease (van Kempen et al. 2018) and diabetes (Dzhambov 2015). Stress and disturbed sleep are believed to be the causal pathways linking noise pollution to cardiovascular disease and diabetes (Dzhambov 2015, van Kempen et al. 2018).

***CON: Risk of Terrorist Attacks (Ex. disabling critical travel routes or mass killings)***
*Homeland Security Today, July 28 2022*
https://www.hstoday.us/featured/huge-potential-for-terror-on-rail-lines-touted-in-accelerationist-attack-tutorial/
Trains lead a lengthy section deeper in the guide about how to target various infrastructure — followed by cell towers; trucks and depots; roads, bridges and highways; water treatment and distribution; commercial business; communications; electrical systems; and HVAC systems — penned by an anonymous “saboteur” who writes, “I have not committed all of the acts discussed in this guide, but if it’s in the lineup then I definitely know someone who has, and consulted them heavily before putting anything here.

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